

DOE/OAK/AMLS/AMEN STANDARD OPERATING PROCEDURE

Controlled Copy No: _____

Review and Approval Cover Sheet

AMLS/AMEN STARTUP AND RESTART OF FACILITIES

DOCUMENT OWNER/GROUP: The Assistant Manager for the Livermore Site

Status:

New:

☒

Major Revision:

☐

Revision	Preparer	Date	Reviewer	Date	Approver	Date
0	C. Sohn <i>C. Sohn</i>	11/15/99	R. Corey Deputy AMLS	11/22/99 <i>R. Corey</i>	M. Hooper AMLS	11/29/99 <i>M. Hooper</i>
	C. Sohn <i>C. Sohn</i>	11/15/99	D. Nakahara LEPD	11/20/99 <i>D. Nakahara</i>	T. Davis AMEN	11/22/99 <i>T. Davis</i>
			P. Hill ISOD	11/15/99 <i>P. Hill</i>		
			S. Samelson DPOM	11/17/99 <i>S. Samelson</i>		

Record of Revisions

00.0 This procedure is a new document.

Distribution List

The following Assistant Manager for the Livermore Site (AMLS) and the Assistant Manager for Environment and National Security (AMEN) positions shall receive the original issue and all subsequent revisions to this document:

- Assistant Manager for the Livermore Site
- Assistant Manager for Environment and National Security
- Deputy Assistant Manager for Environment and National Security
- Deputy Assistant Manager for the Livermore Site
- AMLS Division Directors
- Livermore Environmental Programs Division Director
- AMLS Senior Safety Advisor
- LSOD Deputy Director for Environmental and Remediation Protection Operations
- LSOD Deputy Director for Facility Operations
- LSOD Deputy Director for Health & Safety Operations
- Facility Representatives
- Document Users
- B-311 Librarian (contractor)

1. **PURPOSE.** This Assistant Manager for the Livermore Site (AMLS) and Assistant Manager for Environment and National Security (AMEN) Standard Operating Procedure (SOP) delineates the implementation of DOE Order 425.1A, *Startup and Restart of Nuclear Facilities* by defining specificity to ensure uniform implementation of Operational Readiness Reviews (ORR) and Readiness Assessments (RA) at the Lawrence Livermore National Laboratory (LLNL). This procedure satisfies requirements for OAK at the LLNL site to meet the requirements of DOE Order 425.1A, 5.a (1).
2. **APPLICABILITY.** This directive identifies specific actions to determine and execute RAs and ORRs. This directive is applicable to all OAK personnel directly responsible for operational oversight of Lawrence Livermore National Laboratory (LLNL) nonreactor nuclear facilities as defined in DOE Order 5480.23, *Nuclear Safety Analysis Reports* and facilities which are designated as requiring ORRs or RAs. This procedure also applies to non-nuclear facilities. This procedure does not apply to accelerators (as defined in DOE Order 420.2). This procedure is not applicable to the Contractor at this time, but it is intended that this procedure will become applicable in the future or the Contractor will develop their own procedures consistent with this procedure.
3. **ACRONYMS.**

AA	Approval Authority
AMEN	Assistant Manager for Environment and National Security
AMLS	Assistant Manager for the Livermore Site
CRA	Criteria and Review Approach
CRAD	Criteria and Review Approach Document
CSO	Departmental Cognizant Secretarial Officer
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
FRAM	Functions, Responsibilities and Authorities Manual
HQ	U.S. Department of Energy-Headquarters
IP	Implementation Plan
LLNL	Lawrence Livermore National Laboratory
LSOD	Livermore Safety Oversight Division
MCR	Minimum Core Requirements
MOU	Memorandum of Understanding
NST	Nuclear Safety Team

OAK	U.S. Department of Energy, Oakland Operations Office
ORR	Operational Readiness Review
OSR	Operational Safety Requirements
POA	Plan of Action
RA	Readiness Assessment
RP	Readiness Plan
SD	Supplemental Directive
SAR	Safety Analysis Report
SME	Subject Matter Expert
SNR	Startup Notification Report
SOP	Standard Operating Procedure
TSR	Technical Safety Requirement
WSS	Work Smart Standards

4. DEFINITION OF TERMS.

4.1. Approval Authority is the only individual with the authority to make decisions regarding acceptance of safety risk and authorization basis type documentation for a facility as defined by the applicable DOE Orders. Further delegations must be formal and in accordance with all conditions and requirements accompanying any delegation of approval authority. Dependent upon the type of facility and its hazard classification/categorization, the approval authority may be a DOE or contractor individual. OAK Supplemental Directive (SD) 5481.1B (when approved) and DOE-Standard 1027-92 are used to determine the hazards classification/categorization.

4.2. Authorization Basis is those aspects of the facility design basis and operational requirements relied upon by DOE to authorize operation. These aspects are considered to be important to the safety of facility operations. The authorization basis is described in documents such as the facility Safety Analysis Report (SAR) and other safety analyses; Hazard Classification documents, the Technical Safety Requirements (TSR)/Operational Safety Requirements (OSR), DOE issued Safety Evaluation Reports (SER), the approval letter from the approval authority, and facility specific commitments made in order to comply with DOE Orders or policies. This is equivalent to "safety basis" found in DOE Order 5480.23 and "authorization basis" cited in DOE Order 5480.21. An example of the authorization basis for non-nuclear high and moderate hazard facilities would include the safety documentation (SAR and OSRs), facility specific commitments, DOE approval letters, SER, etc. An example of the authorization basis for a non-nuclear low hazard facility would include the preliminary hazards analysis.

- 4.3. Extended Shutdown for RA is a shutdown that is based on the Hazard Class or Hazard Categorization of the facility as described in DOE-STD-1027-92 and the OAK SD 5481.1B (when approved). The time limits are as follows:
 - 4.3.1. Hazard Class High Facility: shutdown six months or more;
 - 4.3.2. Hazard Class Moderate Facility: shutdown 12 months or more;
 - 4.3.3. Hazard Class Low Facility: shutdown 24 months or more;
 - 4.3.4. Hazard Category 2 Facility: shutdown 12 months or more; and
 - 4.3.5. Hazard Category 3 Facility: shutdown 24 months or more.
- 4.4. Facility is the facility, process or activity performing the program work.
- 4.5. Line Management is the unbroken chain of command which extends from the Secretary through the Under Secretary, to the Cognizant Secretarial Officers (CSO) who set program policy and plans and develop assigned programs, to field organization managers who are responsible to the CSO for execution of these programs, to the Contractors who conduct the programs. This procedure specifically includes but is not restricted to the definition of Line Management being the following: the Cognizant Operations Team Leader, the cognizant Division Director, and the cognizant Assistant Manager.
- 4.6. Minor modifications are modifications that do not affect the safety basis of the facility.
- 4.7. Nonreactor Nuclear Facility is a facility in which activities or operations involve radioactive and/or fissionable materials in such form and quantity that a nuclear hazard potentially exists to the employees or the general public. Included are activities or operations that: (1) produce, process, or store radioactive liquid or solid waste, fissionable materials, or tritium; (2) conduct separations operations; (3) conduct irradiated materials inspection, fuel fabrication, decontamination, or recovery operations; (4) conduct fuel enrichment operations; or (5) perform environmental remediation or waste management activities involving radioactive materials. Incidental use and generation of radioactive materials in a facility operation (e.g., check and calibration sources, use of radioactive sources in research and experimental and analytical laboratory activities, electron microscopes and X-ray machines) would not ordinarily require the facility to be included in this definition.
- 4.8. Nuclear Facility/Operation is a facility and/or nuclear operation or activity that meets or exceeds Hazard Category 3 threshold criteria as defined by reference in DOE Order 5480.23 and supporting DOE standards.
- 4.9. Operational Readiness Review (ORR) is a disciplined, systematic, documented and performance based examination of facilities, equipment, personnel, procedures and management control systems to ensure that a facility or activity will be operated within its approved safety basis. The amount of detail in each ORR will vary with the complexity and hazards of the facility/activity and the situation surrounding the startup. Utilization of an ORR is defined dependent upon the hazard categorization/classification of the facility and the reason for start-up/re-start.

- 4.10. Programmatic Issues include but are not limited to the following: the technical safety requirements/safety analysis revisions; implementation of configuration management system; implementation of order compliance systems; required administrative, operating and maintenance procedures; completion of operator training; or establishment of other formal programs.
- 4.11. Readiness Assessment (RA) is a disciplined, systematic, documented and performance based examination of facilities, equipment, personnel, procedures and management control systems to ensure that a facility or activity will be operated within its approved safety basis. The amount of detail in each RA will vary with the complexity and hazards of the facility/activity and the situation surrounding the startup. Utilization of an RA is defined dependent upon the hazard categorization/classification of the facility and the reason for start-up/re-start.
- 4.12. Routine Shutdown is a shutdown normally directed by contractor management due to the end of the work period or due to a lack of programmatic work or programmatic funds and in compliance with applicable TSRs/OSRs or control set. See Exhibit 5 for examples of routine shutdowns.
- 4.13. Safety Analysis are those documents meeting the intent of DOE Order 5480.23 and DOE Order 5480.22, including but not limited to Safety Analysis Report, Basis for Interim Operation, Preliminary Safety Analysis Report, Operational Safety Requirements, Technical Safety Requirements and Interim Safety Basis.
- 4.14. Safety Basis is the combination of information relating to the control of hazards at a nuclear facility (including design, engineering analysis, and administrative controls) upon which DOE depends upon for its conclusion that activities at the facility can be conducted safely.
- 4.15. Safety Evaluation Report (SER) is a report which documents and validates the authorization basis and any other relevant factor upon which DOE authorized a facility to be constructed and perform pre-operational testing, to be operated, or to be shut down and decommissioned. A SER may define conditions and/or restrictions to be imposed by DOE, in addition to those defined by the Contractor in the SAR and related TSR/OSR. Therefore, the SER is part of the Authorization Basis for facility operation and is transmitted to the Contractor along with the SAR and TSRs/OSRs.
- 4.16. Shall/will is a word used to denote a mandatory condition, stated in a directive, which must be met or complied with.
- 4.17. Should/may is a word used to denote a recommended practice or guideline that is not mandatory but is intended to comply with good practice or a standard.
5. **RESPONSIBILITIES.** OAK responsibilities are defined in the OAK Functions, Responsibilities and Authorities Manual (FRAM), reference 8.5, and are not repeated in this directive. General requirements specific to this directive, and OAK expectations and guidance for meeting requirements and carrying out responsibilities are presented in this

directive.

The Livermore Safety Oversight Division (LSOD) has responsibility to oversee the policy and evaluation processes for all LLNL ORRs/RAs. In the event the LSOD has line management responsibility for a facility, the responsibility of overseeing the policy and evaluation process on that specific ORR/RA shall be delegated to another organization. LSOD has the responsibility to maintain this procedure and the review of need for revision.

6. **GENERAL CONTENT.** This directive is applicable to facilities as defined in references 8.1, 8.2 and 8.6.

6.1 Attachment 1, designates when an ORR is required to be performed. The procedure for the ORR is contained in Attachment 2.

6.2 Attachment 1, designates when an RA is required to be performed. The procedures for the RA are contained in Attachment 2.

6.2.1 A operational readiness review or readiness assessment, dependent upon the type of facility, for a routine shutdown (see Exhibit 5) is not required under the following conditions unless directed by OAK line management:

6.2.1.1 Facility performing program work within 90 days of shutdown and OAK formally concurred restart procedures are in place.

6.2.1.2 Minor modifications to the facility and/or procedures are formally authorized by OAK. If there have been minor modifications to the facility and/or procedures, the contractor shall inform OAK line management prior to the restart.

6.2.2 The contractor and the OAK Approval Authority, shall identify and document those facilities that may be restarted without an RA or an ORR. This documentation shall provide adequate justification to substantiate that rationale. The OAK concurred restart procedures shall be referenced in the documentation.

6.3 Exemption requirements shall be consistent with DOE Order 251.1, *Directive Systems*.

6.4 DOE/OAK shall have the right to determine the review level required for any particular situation regarding an RA or ORR.

7. **RECORDS.** OAK records shall be maintained in accordance with DOE and OAK directives.

8. REFERENCES.

- 8.1. DOE Order 425.1A, *Startup and Restart of Nuclear Facilities*, which provides direction for reviews prior to the startup/restart of nuclear facilities/activities.
- 8.2. DOE Standard 1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23 Nuclear Safety Analysis Reports*.
- 8.3. DOE Standard 3006-95, *Planning and Conduct of Operational Readiness Reviews (ORR)* which supports reference 8.1.
- 8.4. DOE Handbook 3012-96, *Guide to Good Practices for Operational Readiness Reviews (ORR)*, Team Leaders Guide which provides supplemental guidance to the ORR Team Leader for preparation and conducting ORRs.
- 8.5. OAK SD M 411.1-2, *Environment, Safety & Health Functions, Responsibilities & Authorities Manual (FRAM)*, Oakland Operations Office.
- 8.6. OAK SD 5481.1B, *Safety Analysis and Review System* (when approved).

9. EXHIBITS

- 9.1. Exhibit 1 -- Startup Notification Report Format
- 9.2. Exhibit 2 -- Assessment Development and Documentation
- 9.3. Exhibit 3 -- Pre/post-start Finding Criteria
- 9.4. Exhibit 4 -- Minimum information for Memorandum of Understanding
- 9.5. Exhibit 5 -- Examples of Routine Shutdowns

10. ATTACHMENTS

10.1 ATTACHMENT 1 – STARTUP/RESTART REQUIREMENTS SUMMARY*

STARTUP/RESTART REQUIREMENT SUMMARY								
Hazard Category/Classification of facility being started	Basis for shutdown	New Facility	DOE Management directed, unplanned shutdown	Extended shutdown ^h	Facility modifications requiring modification to safety basis	Contractor directed, unplanned shutdowns	DOE directed Shutdown caused by operations outside safety basis	Other than routine shutdowns
Hazard Category 2	Approval Authority	S-1 ^a	Shutdown Official ^c	≥12 months ^h CSO ^c	CSO ^c	Operations Office Manager ^a	Approval Authority ^b	Operations Office Manager ^a
	Review Type	ORR	ORR	ORR	ORR or RA ^d	RA ^d	ORR	RA ^d
Hazard Category 3	Approval Authority	CSO ^c	Shutdown Official ^c	≥24 months See Section 4.3 ^h Operations Office Manager ^a	Operations Office Manager ^a	Operations Office Manager ^a	Approval Authority ^b	Operations Office Manager ^a
	Review Type	ORR	ORR	RA ^d	RA ^d	RA ^d	ORR	RA ^d
Hazard Class High, Moderate and Low (radiological or other industrial facilities)	Approval Authority	Operations Office Manager ^a	Shutdown Official ^c	See Section 4.3 Operations Office Manager ^{a,f}	Operations Office Manager ^a	Operations Office Manager ^a	Approval Authority ^{b,g}	Operations Office Manager ^a
	Review Type	RA ^d	RA ^d	RA ^d	RA ^d	RA ^d	RA ^d	RA ^d

^a = Or designee by indicated DOE official.

^b = Official designated to approve safety basis which was violated.

^c = CSO may designate other approval authority based on specific circumstances.

^d = RA as required by operations office procedures; note that for some facility modifications, an ORR is practical. This determination can only be made by the Approval Authority.

^e = See OAK FRAM for subsequent delegations.

^f = Startup authorization for non-nuclear facilities is the same as Category 3 hazard nuclear facilities, except that a readiness assessment may be performed instead of an operational readiness review. A graded approach should be used for very low hazard facilities, such as office buildings.

^g = When the Approval Authority is the Contractor, the DOE directed shutdown must be approved by DOE.

^h = See section 4.3 of the AMLS/AMEN procedure on Startup and Restart of Facilities.

10.2 ATTACHMENT 2 – STARTUP /RESTART PROCEDURE

1. **Preparation.** It is imperative that persons preparing for or performing an ORR or RA read references 8.1 and 8.3 before performing their assignments. Team Leaders shall read reference 8.4.
2. **Startup Notification Report (SNR).** The SNR is a report that identifies all planned startups/restarts of facilities (including significant activities) for the next two years. This report shall be in the format of Exhibit 1 and provide justification for any review type or Approval Authorization not meeting the requirements of Attachment 1.

The SNR will be submitted to DOE-HQ annually and updated quarterly if there are significant changes, copies will be provided to the AMEN, the AMLS and the LSOD Director. It is incumbent upon the contractor to notify OAK line management when an unplanned shutdown requires an ORR or RA for restart. This notification shall be made in writing as soon as possible and include all the information required by Exhibit 1.

Performer	Action
Contractor	<ul style="list-style-type: none"> Develop quarterly SNR in the format described in Exhibit 1 and submit to OAK line management (AMEN and AMLS) with a copy to LSOD
OAK Line Management (AMLS and AMEN)	<ul style="list-style-type: none"> Review SNR and comment Obtain input from LSOD Submit annually (by November 1) or when significant changes have been made in the quarterly SNR to HQ CSO for review and approval

3. **Operational Readiness Reviews.** Operational Readiness Review (ORR) is a disciplined, systematic, documented and performance based examination of facilities, equipment, personnel, procedures and management control systems to ensure that a facility or activity will be operated within its approved safety basis. The ORR provides a structured and independent verification of facility readiness to startup. An ORR consists of the contractor and DOE performing formalized reviews of the facility. The ORR validates to OAK line management, responsible for the facility, that the facility has successfully achieved a state of readiness to commence operations. It is incumbent on contractor management to have the facility ready for operation prior to declaring readiness. The ORR should not be used as a management technique to achieve the state of readiness.

The ORR process deliverables are the Plan of Action (POA), the Implementation Plan (IP), the Final Report and the Readiness to Proceed Memorandum.

Those steps of the ORR process that are not applicable (i.e., no comments generated, etc.) may be omitted. Note that numerical requirements listed in this section are from reference 8.3 unless specifically delineated.

PERFORMER	ACTION
Contractor/ Contractor Review Team Leader	<ul style="list-style-type: none"> At least six months prior to the planned startup, or as soon as possible for unplanned restarts, select contractor review Team Leader and prepare contractor POA per 5.9.1. The basis for contractor review Team Leader qualifications is per 5.1.5.1. Lessons learned files should be reviewed in development of the POA for both OAK and the contractor. Submit POA to OAK Line Management for review and approval.
OAK Line Management	<ul style="list-style-type: none"> Submit a copy of the contractor POA to LSOD for concurrence. Review POA and comment.
LSOD	<ul style="list-style-type: none"> Provide comments on the contractor POA to OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> Resolve comments and provide comments to contractor for resolution.
Contractor	<ul style="list-style-type: none"> Revise POA to incorporate comments. Resubmit POA to OAK Line Management
OAK Line Management	<ul style="list-style-type: none"> Provide a copy of the contractor POA to EH for review and comment. Note that oversight review and comment is not required prior to approval. Submit contractor POA to Approval Authority.
Approval Authority	<ul style="list-style-type: none"> Approve contractor POA or request appropriate revision and approve after revision satisfactorily performed.
OAK Line Management	<ul style="list-style-type: none"> Provide approved document to contractor.
Contractor	<ul style="list-style-type: none"> Inform contractor review Team Leader that the POA has been approved and to commence team activities. Note that selection of the team members and preparation of the contractor implementation plan should take place as soon as possible after the approval of the contractor POA.
OAK Line Management/ OAK Review Team Leader	<ul style="list-style-type: none"> Upon approval of the contractor POA, select OAK Review Team Leader. Use 5.4.3 as the basis for review team leader qualifications. Prepare OAK POA in conjunction with OAK Line Management per 5.9.1. Note that in the development of the OAK POA, the OAK ORR/RA Lessons learned should be reviewed. However, the OAK POA should also cover those areas of OAK oversight required for safe operations of the facility. Submit to LSOD.
LSOD	<ul style="list-style-type: none"> Provide comments on OAK POA to OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> Disposition comments from LSOD. Submit OAK POA with concurrence from LSOD, to Approval Authority.

Approval Authority	<ul style="list-style-type: none"> • Approve OAK POA or request appropriate revision and approve after revision satisfactorily performed.
OAK Line Management	<ul style="list-style-type: none"> • Inform OAK review Team Leader that POA has been approved and to commence team activities. Note that the selection of the team members and preparation of the OAK IP should take place as soon as possible after the approval of the OAK POA. Document actions taken to verify readiness. Note that Exhibit 2 provide methodology for complying with this requirement.
Contractor Review Team Leader	<ul style="list-style-type: none"> • Select team members per 5.1.5.2. Note that selection of the team members and preparation of the contractor IP should take place as soon as possible after the approval of the contractor POA. • Prepare contractor IP per 5.9.2. Note that in the development of the IP, the contractor and OAK ORR/RA Lessons learned should be reviewed. • Approve IP and submit to OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> • Submit a copy of the contractor IP to EH for review and comment. Note that oversight review and comment is not required prior to approval. Caution: Open items must not include programmatic issues.
Contractor	<ul style="list-style-type: none"> • Upon achieving readiness, declare readiness and notify contractor review Team Leader to commence the review. • Notify OAK Line Management of start of contractor readiness review.
OAK Line Management	<ul style="list-style-type: none"> • Notify LSOD of start of contractor review.
Contractor Review Team Leader	<ul style="list-style-type: none"> • Conduct contractor readiness review per IP. Note the review shall be open to OAK for oversight activities. • Prepare Final Report per 5.9.3. Note that the Final Report should not be delayed by preparation of lessons learned. • Submit Final Report to contractor • Within 30 days of completion of review, develop lessons learned and append to Final Report.
Contractor	<ul style="list-style-type: none"> • Close pre-start findings and prepare corrective action plans for all post-start findings per 5.7.2. • Develop Readiness to Proceed Memorandum per 5.9.4 to OAK Line Management. • Submit copy of Readiness to Proceed Memorandum with Final Report attached, to OAK Line Management.
OAK Review Team Leader	<ul style="list-style-type: none"> • Prepare for review. See team leader guidance document (Reference 8.4) for preparation of review. • Select team members per 5.4.2. Note that selection of the team members and preparation of the OAK IP should take place as soon as possible after the approval of the OAK POA. • Prepare IP per 5.9.2. Note that in the development of the OAK IP, the OAK ORR/RA Lessons Learned should be reviewed.

	<ul style="list-style-type: none"> • Approve IP • Submit a copy of the IP to EH for review and comment. Note that oversight review and comment is not required prior to approval. • Provide requirements for training and required reading to team members. Caution: Open items must not include programmatic issues.
OAK Line Management	<ul style="list-style-type: none"> • Complete OAK verification of contractor readiness. • Submit copy of contractor Final Report to EH. Note that oversight review and comment is not required prior to approval. • Document readiness results per 5.9.4.3. • Forward with concurrence from LSOD, the readiness results and contractor Readiness to Proceed Memorandum to the Approval Authority.
Approval Authority	<ul style="list-style-type: none"> • When satisfied with contractor and OAK readiness, direct the OAK review Team Leader to commence the review.
OAK Line Management	<ul style="list-style-type: none"> • Notify LSOD of commencement of OAK Readiness Review.
OAK Review Team Leader	<ul style="list-style-type: none"> • Conduct review per IP. Note that pre-start/post-start finding determination is made by use of Exhibit 3. The OAK review Team Leader determines who will close pre-start items. The review shall be open to LSOD for oversight activities. • Upon completion of the review conduct a closeout meeting with Contractor management and OAK Line Management, • Prepare Final Report per 5.9.3. Note that the Final Report should not be delayed by preparation of lessons learned. • Submit the Final Report to OAK Line Management • Within 30 days of completion of the review develop lessons learned and append to Final Report.
Contractor	<ul style="list-style-type: none"> • Prepare corrective action plans to close out all ORR findings per 5.7.2. • Submit corrective action plans to OAK Line Management for approval.
OAK Line Management	<ul style="list-style-type: none"> • Review and approve contractor corrective action plans. • Verify post start finding corrective action plans have been entered into the deficiency tracking system for the facility.
Contractor	<ul style="list-style-type: none"> • Closeout all OAK ORR pre-start items and notify OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> • Notify OAK Review Team Leader of closure of pre-start items requiring team closure.
OAK Review Team Leader or designee	<ul style="list-style-type: none"> • Verify closure of pre-start items requiring team approval. • Forward Final Report and closure verification of all pre-start items, with concurrence of LSOD to the Approval Authority. • Submit copy of Final Report to EH for review and comment. Note that oversight review and comment is not required prior to approval.

Approval
Authority

- When satisfied with facility readiness, authorize startup.

- 4 **Readiness Assessments (RA).** The RA, like the ORR, is a disciplined, systematic, documented and performance-based examination of facilities, equipment, personnel, procedures, and management control systems to ensure that a facility will be operated safely within its approved safety basis. The RA dependent upon the particular facility may be performed entirely by the contractor or a contractor review followed by an OAK review. The amount of detail in each RA will vary with the complexity and hazards of the facility and the situation surrounding the startup. The level of detail must be adequate to justify to a skeptical reviewer the decision being proposed. The detail must be adequate for preparers, reviews and the approver to defend the decisions made. It is incumbent on the facility management to have the facility ready for operation prior to declaring readiness. The RA shall not be used as a management technique to achieve the state of readiness.

The RA relies on OAK Line Management and the contractor to determine the correct level of review necessary. The foundation for readiness of a facility is an approved safety basis as defined in approved safety documentation, approved environmental documentation, a satisfactory safe working environment, and compliance with Work Smart Standards (WSS). The RA must verify that necessary approved requirements documentation is in place and that procedures, personnel, equipment, and systems support the approved requirements.

The RA uses a Memorandum of Understanding (MOU) between the contractor and OAK Approval Authority and a Readiness Plan (RP) developed between the appropriate line management and the review team leader incorporating the requirements of the MOU to provide the means of review. The MOU is further described in Exhibit 4.

The MOU shall also include the level of participation by the contractor and OAK during the RA. The MOU is approved by the OAK Approval Authority.

There are three levels of participation in the RA process as follows:

- Contractor RA with the contractor as the Approval Authority. Normally this will be used for contractor directed unplanned shutdowns for Hazard Category 3, Hazard Class Low, Radiological and Industrial Facilities unless there are serious safety issues, for other routine shutdowns of Hazard Category 3, Hazard Class Low, Radiological and Industrial Facilities and for new activities or processes at an Industrial Facility. For a single workstation or glovebox activation in a Hazard Category 2 or 3 nuclear facility, this type of review is probably appropriate. A generic MOU may be utilized for a specific facility.
- Contractor RA with OAK as the Approval Authority. Normally this will be used for contractor directed unplanned shutdowns of Hazard Category 1 and 2 or Hazard Class High and Moderate facilities unless there is a serious safety reason, or for Hazard

Category 3, Hazard Class Low, Radiological and Industrial Facilities for serious safety reasons, for routine shutdowns of Hazard Category 1 or 2 or Hazard Class High or Moderate Facilities, for extended shutdowns of Hazard Category 3, Hazard Class High or Moderate Facilities, for new starts of Industrial Facilities, and for startup of processes or activities at Radiological or Hazard Class Low Facilities. For activation of multiple gloveboxes or workstations or a room within a Radioactive Materials Area, this type of review or Contractor RA followed by an OAK RA would probably be appropriate.

- Contractor RA followed by an OAK RA with OAK as the Approval Authority. Normally this will be used for all other RAs. These RAs may be performed in parallel if so specified in the MOU. However, justification for this action shall be documented in the MOU. For modification to a building safety system that modifies the safety basis, this type of review or an ORR would be appropriate.

The RA process deliverables are the MOU, RP and the Final Report. For Contractor RAs with OAK as the Approval Authority and Contractor RAs followed by an OAK RA with OAK as the Approval Authority, a Readiness to Proceed Memorandum is required.

- 4.1 **Memorandum of Understanding.** Note that those steps of the process that are not applicable (i.e., no comments are generated, etc.) may be omitted.

PERFORMER	ACTION
Contractor	<ul style="list-style-type: none"> • At least two months prior to the planned startup or as soon as possible for unplanned restarts develop the MOU. The MOU shall contain the information required by Exhibit 4. • Submit the MOU to OAK Line Management for review and approval.
OAK Line Management	<ul style="list-style-type: none"> • Submit a copy of MOU to LSOD for review and comment. • Review MOU and comment.
LSOD	<ul style="list-style-type: none"> • Review MOU and submit comments to OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> • Resolve comments with LSOD. • Provide comments to contractor for revision.
Contractor	<ul style="list-style-type: none"> • Revise MOU. • Submit MOU to OAK Line Management for review and approval.
OAK Line Management	<ul style="list-style-type: none"> • Develop cover letter and include OAK review Team leader (if required) and submit letter and MOU with concurrence of LSOD to OAK Approval Authority.
Approval Authority	<ul style="list-style-type: none"> • Approve MOU or request the appropriate revision and approve after revision satisfactorily performed.
OAK Line Management	<ul style="list-style-type: none"> • Provide contractor with the approved document.

- 4.2 **Contractor RA with Contractor as AA.** Note that those steps of the process that are not applicable (i.e., no comments are generated, etc.) may be omitted. The Contractor RA shall be performed per their procedure. The RA shall be open to OAK for oversight activities.

PERFORMER	ACTION
Contractor	<ul style="list-style-type: none"> Notify OAK Line Management of start of the RA.
OAK Line Management	<ul style="list-style-type: none"> Notify LSOD of start of RA.
Contractor Approval Authority	<ul style="list-style-type: none"> Submit a copy of the Final Report to OAK Line Management to notify them of the startup.
OAK Line Management	<ul style="list-style-type: none"> Submit a copy of the Final Report to LSOD.

- 4.3 **Contractor RA with OAK as AA.** Note that those steps of the process that are not applicable (i.e., no comments are generated, etc.) may be omitted. Note that numerical requirements listed in this section are from reference 8.3 unless specifically delineated.

PERFORMER	ACTION
Contractor/Contractor Review Team Leader	<ul style="list-style-type: none"> Select Contractor Review Team Leader. Prepare RP using the requirements of the MOU. Note that in the development of the RP, the Contractor and OAK ORR/RA Lessons Learned should be reviewed. The RP shall cover all areas needed to provide safe operations of the facility. The means of conducting the review is delineated in the MOU. Submit RP to OAK Line Management.
Contractor review Team Leader	<ul style="list-style-type: none"> Select team members. Team members shall be qualified per 5.10.1. Note that unless justified in the MOU, team members shall not review areas for which they are directly responsible.
OAK Line Management	<ul style="list-style-type: none"> Submit a copy of the RP to LSOD and EH for review and comment. Note that oversight review and comments are not required prior to approval. Review RP and comment.
LSOD	<ul style="list-style-type: none"> Review RP and provide comments to OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> Resolve comments with LSOD. Provide comments to contractor for resolution.
Contractor	<ul style="list-style-type: none"> Revise RP to incorporate comments. Resubmit RP to OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> Submit RP with concurrence of LSOD to Approval Authority.

OAK Approval Authority	<ul style="list-style-type: none"> • Approve RP or request appropriate revisions and approve after revisions satisfactorily performed. • Return RP to OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> • Return RP to Contractor. • Document actions taken to verify readiness (reference 8.1, Section 4.b(7)(b)). Note that Exhibit 2 provides a methodology for complying with this requirement.
Contractor	<ul style="list-style-type: none"> • Upon declaration of facility readiness, request contractor review Team Leader to perform RA. Note that open items must not include programmatic issues. • Notify OAK Line Management of commencement of RA.
OAK Line Management	<ul style="list-style-type: none"> • Notify LSOD of start of RA.
Contractor Review Team Leader	<ul style="list-style-type: none"> • Conduct RA per RP. Note that the review shall be open to OAK Line Management and LSOD for oversight activities. • Prepare Final Report. Final Report should follow the format of sections 5.9.3. Note that the Final Report should not be delayed by preparation of "Lessons Learned". • Submit Final Report to Contractor. • Within 30 days of completion of review, develop Lessons Learned and append to Final Report.
Contractor	<ul style="list-style-type: none"> • Close any pre-start findings and develop Corrective Action Plans for post-start findings. Closure of findings should follow 5.7.2. • Upon closure of pre-start findings submit the Readiness to Proceed memorandum with the Final Report to OAK Line Management. Note the OAK participation in closure of pre-start findings is per the MOU.
OAK Line Management	<ul style="list-style-type: none"> • Verify closure of pre-start findings. • Complete verification and document actions taken to assure contractor readiness and DOE's ability to perform oversight of the facility. • Submit copy of the Final Report to LSOD for review and comment. • Submit with concurrence of LSOD, the Readiness to Proceed Memorandum to OAK Approval Authority
OAK Approval Authority	<ul style="list-style-type: none"> • Approve startup of facility or request appropriate revision and approve after revision satisfactorily performed.

4.4 **Contractor RA Followed by OAK RA.** Those steps of the RA process that are not applicable (i.e., no comments are generated, etc.) may be omitted. Note that numerical requirements listed in this section are from reference 8.3 unless specifically delineated.

PERFORMER	ACTION
Contractor/Contractor Review Team Leader	<ul style="list-style-type: none"> Prepare RP using the requirements of the MOU. Note that in the development of the RP, the contractor and OAK lessons learned should be reviewed. Note that the RP shall cover all areas needed to provide for safe operations of the facility. The means of conducting the review is delineated in the MOU. Submit RP to OAK Line Management.
Contractor Review Team Leader	<ul style="list-style-type: none"> Select team members. Team members shall be qualified per 5.10.1. Note that unless justified in the MOU, team members shall not review areas for which they are directly responsible.
OAK Line Management	<ul style="list-style-type: none"> Submit a copy of the RP to LSOD for review and comment. Review RP and comment.
LSOD	<ul style="list-style-type: none"> Review RP and provide comments to OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> Resolve comments with LSOD. Provide comments to contractor resolution.
Contractor/Contractor Review Team Leader	<ul style="list-style-type: none"> Revise RP to incorporate comments. Resubmit RP to OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> Submit RP, with concurrence of LSOD to Approval Authority.
OAK Approval Authority	<ul style="list-style-type: none"> Approve RP or request the appropriate revision and approve after revision satisfactorily performed.
OAK Line Management	<ul style="list-style-type: none"> Return RP to Contractor. Document actions taken to verify readiness. Exhibit 2 provides the methodology for complying with this requirement.
OAK Review Team Leader	<ul style="list-style-type: none"> Prepare for review. Note that reference 8.4 provides Review Team Leader guidance for preparation of review. Select team members. Team members shall be qualified per 5.10.1. Note that unless justified in the RP, team members shall not review areas for which they are directly responsible.
OAK Line Management/OAK Review Team Leader/OAK Team members	<ul style="list-style-type: none"> Prepare RP. Note that in the development of the RP, the OAK ORR/RA lessons learned should be reviewed. Note that the RP shall cover all areas needed to provide for safe operations of the facility. The contractor RP should be used as a guide in the development of the OAK RP. However, the OAK RP should also cover those areas of OAK oversight required for safe operations of the facility. The means of conducting the review is delineated in the MOU.
OAK Line Management	<ul style="list-style-type: none"> Submit a copy of the OAK RP to LSOD for review and comment.
LSOD	<ul style="list-style-type: none"> Review and provide comments on the OAK RP to OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> Resolve comments with LSOD.

OAK Line Management/OAK Review Team Leader	<ul style="list-style-type: none"> Revise OAK RP to incorporate comments. Submit OAK RP, with concurrence of LSOD to the Approval Authority.
Approval Authority	<ul style="list-style-type: none"> Approve RP or request the appropriate revision and approve after revision satisfactorily performed. Note that open items must not include programmatic issues.
Contractor	<ul style="list-style-type: none"> Upon declaration of facility readiness request Contractor Review Team Leader to perform RA. Notify OAK Line Management of commencement of Contractor RA.
OAK Line Management	<ul style="list-style-type: none"> Notify LSOD of start of Contractor RA.
Contractor Review Team Leader	<ul style="list-style-type: none"> Conduct Contractor RA per RP. Note that the review shall be open to OAK Line Management and LSOD for oversight activities. Prepare Final Report. The Final Report should follow the format of 5.9.3. Note that the Final Report should not be delayed by preparation of Lessons Learned. Submit the Final Report to the Contractor. Within 30 days of completion of review, develop Lessons Learned and append to Final Report.
Contractor	<ul style="list-style-type: none"> Close any pre-start findings and develop Corrective Action Plans for post-start findings. Closure of findings should follow 5.7.2. Upon closure of pre-start findings submit Readiness to Proceed Memorandum with the Final Report attached to OAK Line Management. Open items must not include programmatic issues.
OAK Line Management	<ul style="list-style-type: none"> Verify closure of pre-start findings. Complete verification and document actions taken to assure contractor readiness and DOE ability to perform oversight of the facility. Document readiness results per 5.9.4.3. Submit copy of the Final Report to LSOD for review and comment.
LSOD	<ul style="list-style-type: none"> Provide comments on Final Report to OAK Line Management.
OAK Line Management	<ul style="list-style-type: none"> Resolve comments from LSOD and submit Final Report to Approval Authority. When satisfied with contractor and DOE readiness, forward with concurrence of LSOD, the contractor Readiness to Proceed Memorandum to the Approval Authority.
Approval Authority	<ul style="list-style-type: none"> When satisfied with contractor and DOE readiness, direct the OAK Review Team Leader to commence the review.
OAK Line Management	<ul style="list-style-type: none"> Notify LSOD of commencement of OAK Readiness Review.

OAK Review Team Leader	<ul style="list-style-type: none"> • Conduct review per RP. Note that pre-start/post-start findings determination is made by use of Exhibit 3. The OAK Review Team leader determines who will close pre-start items. The review shall be open to LSOD for oversight activities. • Upon completion of the review conduct a closeout meeting with Contractor management and OAK Line Management. • Prepare Final Report. The Final Report should follow the format of 5.9.3. Note that the Final Report should not be delayed by preparation of Lessons Learned. • Submit Final Report to OAK Line Management. • Within 30 days of completion of review, develop Lessons Learned and append to Final Report.
Contractor	<ul style="list-style-type: none"> • Prepare Corrective Action Plans to closeout all RA findings per 5.7.2. • Submit Corrective Action Plans to OAK Line Management for approval.
OAK Line Management	<ul style="list-style-type: none"> • Review and approve contractor Corrective Action Plans. • Review and provide comments on Final report to OAK Review Team Leader. • Verify post-start findings Corrective Action Plans have been entered into the facility issues tracking system. • Submit copy of Final Report to LSOD for review and comment.
LSOD	<ul style="list-style-type: none"> • Provide comments on Final Report to OAK Review Team Leader.
Contractor	<ul style="list-style-type: none"> • Closeout all OAK RA pre-start items and notify OAK Line Management of closure.
OAK Line Management	<ul style="list-style-type: none"> • Notify OAK Review Team Leader of closure of pre-start items requiring team closure.
OAK Review Team Leader/team members	<ul style="list-style-type: none"> • Verify closure of pre-start items requiring closure. • Forward Final Report and closure verification of all pre-start items, with concurrence of LSOD to the Approval Authority.
Approval Authority	<ul style="list-style-type: none"> • When satisfied with Final Report, authorize startup of facility.

5 **Lessons Learned Program.** LSOD shall maintain a file of the prior ORRs/RAs so that Lessons Learned can be reviewed and applied to future reviews. It is highly recommended that these reports be used in the development of the Readiness Review documents to help improve the overall efficiency and operability of the ORR/RA process at OAK.

6 **Records.** All files required for ORRs and RAs shall be maintained in accordance with the requirements of reference 8.1.

EXHIBIT 1 – STARTUP NOTIFICATION REPORT FORMAT

STARTUP NOTIFICATION REPORT TWO YEAR PROJECTION									DATE:
Facility & Activity Name	Hazard Category	Contractor Review	DOE Review	Review Type	Approval Authority	Startup or Restart	Scheduled Start	Reasons for Restart	Point of Contact

Requirements for completing Startup Notification Report.

1. **Facility & Activity Name:** This description should be detailed enough for a person to have a basic understanding of the facility and the activities to be reviewed.
2. **Hazard Category:** The hazard categorization/classification from DOE Order 5480.23, DOE-STD-1027-92 and if available OAK SD 5481.1B (when approved). However, if Hazard Categorization/Classification has not been accomplished, a discussion of the relative hazards shall be referenced and attached to the report.
3. **Contractor Review:** Scheduled start and completion of the contractor ORR/RA startup/restart activities.
4. **DOE Review:** Scheduled start and completion of the DOE ORR/RA startup/restart activities.
5. **Review Type:** The type of review required by Attachment 1. If this table differs from Attachment 1, justification shall be provided with the report.
6. **Approval Authority:** The final Approval Authority for the activity based on Attachment 1. If this table differs from Attachment 1, justification shall be provided with the report.
7. **Startup or Restart:** Designation as to whether the review is for a startup of a new facility/activity or restart of an existing facility/activity.
8. **Scheduled Start:** Month and Year in which the activity is scheduled to actually startup or restart.
9. **Reason for Restart:** If the activity is a restart, the reason for the "Shutdown" shall be provided. This may be a very short description. If a more detailed discussion is required it shall be attached to the report.
10. **Point of Contact:** Contractor point of contact.

EXHIBIT 2 – ASSESSMENT DEVELOPMENT AND DOCUMENTATION

Line Management is responsible to document their actions to verify OAK and contractor readiness including review of closure of contractor ORR finding(s), assessments of completion of prerequisites, and other assessments performed to ascertain readiness. This criterion may be useful to develop the line management assessments for ascertaining readiness.

Experience has shown that coordination with other organizations is essential for a smooth and successful startup. For example, validating areas of order compliance or safety should be performed in close coordination with LSOD and the NST. Another important aspect is the coordination between the OAK and HQ elements and/or other external organizations (e.g., DNFSB). Lines of communication should be established early in the process to identify potential issues and avoid additional unidentified expectations late in the startup process. For the startup/restart of facilities, a graded approach should be used in developing the criteria. Early development of this criteria and real time validations, in addition to validations conducted at or near completion of the project, will greatly simplify and enhance the process.

The methodology for performing the verification may include the use of checklists, assessment objectives, and/or sampling techniques and should be of sufficient detail to ensure a thorough assessment of readiness. For projects performed in phases or where project preparations are in progress for an extended period of time, a combination of reviews covering the different phases or milestones may be used. In some instances, this verification may be the only review performed by OAK.

The following topics are provided for use in developing other assessment plans. Criteria that addresses minimum core requirements (MCR) of reference 8.1, is annotated by the MCR number. Note that for a new facility, implementation of the first step should be executed as early in the process as possible. By assuring this step is performed and monitoring throughout the startup OAK Line Management can assess the progress being made.

1. Verify a realistic master schedule is developed and updated that reflects all issues required for startup. The schedule should be integrated between construction and operations, resource loaded, contain the critical path, and reflect ancillary work (such as required safety analyses and associated documentation, order compliance and compliance schedule commitments, Defense Nuclear Facilities Safety Board (DNFSB) meetings and other DNFSB interface requirements, etc.) as well as the milestones associated with work in the facility.
2. Verify an adequate startup or restart test program has been developed that includes adequate plans for graded operations testing to simultaneously confirm the operability of equipment, the viability of procedures, the training of operators, and the confirmation of resolution of associated issues. (MCR 10)
3. Verify a program is established and implemented to promote a site-wide culture in which personnel exhibit an awareness of public and worker safety, health and environmental protection requirements and through their actions, demonstrate a high priority commitment to comply with these requirements. (MCR 14)
4. Verify the contractor POA or RP is complete and acceptable.
5. Develop validations of implementation of issues, actions and programs identified in the contractor startup plan and/or POA/RP. Detailed vertical slice validation techniques on a sample of the actions are recommended.

6. Verify the contractor has Readiness Review activities in accordance with contractor Readiness Self Assessment plans. Periodic real time assessments of the performance of the readiness self assessment should be included. Assessment activities should include:

- a. Independent inspections in subject areas.
- b. Field inspections accompanying ORR/RA personnel.
- c. Attendance at ORR/RA Team meetings.
- d. Review of the ORR/RA Team reports and issues.
- e. Review of the ORR/RA Team issue closure process.

The above activities should be performed using sampling techniques, not 100% verifications.

7. Verify the contractor ORR/RA Team has been adequately staffed and has developed and approved an Implementation Plan/Readiness Plan in accordance with approved contractor procedures.
8. Verify the contractor ORR/RA team has performed Readiness Review activities in accordance with the contractor IP or RP. Periodic real time oversight of ORR/RA team activities should be included. Oversight activities should include:

- a. Independent inspections in subject areas.
- b. Field inspections accompanying ORR/RA personnel.
- c. Attendance at ORR/RA Team meetings.
- d. Review of the ORR/RA Team reports and issues.
- e. Review of the ORR/RA Team issue closure process.

The above activities should be performed using sampling techniques, not 100% verifications.

9. Verify the contractor's ORR is complete and acceptable. Ensure the results of the contractor ORR/RA are adequate to verify the readiness of hardware, personnel and management programs for operations. This verification should include a review of all completed RSA documentation and the contractor ORR/RA Report, as well as selected field verification reviews. (MCR 17)
10. Ensure unplanned shutdowns and surrounding events were properly classified in accordance with DOE Order 232.1A and facility procedures. Review the contractor's investigation of the shutdown (including post-trip/unscheduled shutdown investigation documentation when applicable to ensure the root causes of the shutdown have been identified and corrected.
11. Verify training and qualification programs for operations and operations support personnel have been established, documented and implemented. Ensure the training and qualification program encompasses the range of duties and activities required to be performed. (MCR 2)
12. Verify the level of knowledge of operations and operations support personnel is adequate based on reviews of examination and examination results, and selected interviews of operating and operations support personnel. (MCR 3)
13. Verify facility safety documentation for the hazard category of the facility (as defined in DOE-STD-1027 and if available OAK SD5481.1B) is in place that describes the safety envelope of the facility. The safety documentation should characterize the hazards associated with the facility and should identify mitigating measures (systems, procedures, administrative controls, etc.) which protect workers and the public from those hazards. Ensure safety systems and systems essential to worker and public safety are defined and a system to maintain control over the design and modification of facilities and safety-related systems is established. (MCR 4)
14. Verify management programs are established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure operational support services (e.g., training, maintenance, waste management, environmental protection, industrial safety and hygiene, radiological protection and health physics, emergency preparedness, fire protection, quality assurance, criticality safety and engineering) are adequate for operations. (MCR 8)

15. Verify functions, assignments, responsibilities and reporting relationships are clearly defined, understood and effectively implemented with line management responsible for control of safety. (MCR 11)
16. Ensure facility systems and emergency equipment are operable and in a satisfactory operating condition in accordance with an approved configuration management system.
 - a. Verify a program is in place to confirm and periodically reconfirm the condition and operability of safety systems, including safety related process systems and safety related utility systems. Ensure pre-startup, special test, Technical Safety and operating procedure requirements have been met. Include system walkdowns and reviews of the system alignment procedures. Also include examinations of records of tests and calibration of safety system and other instruments which monitor limiting conditions of operation or satisfy TSRs. Verify no plant conditions exist which result in a violation of or conflict with the TSR or the Safety Analysis Report (SAR). (MCR 5)
 - b. Verify required shutdown maintenance, inspection, and surveillance test/activities have been completed. Include a review of the list of backlog work items. The list should primarily be recently emerging work items and should be trending downward. Perform random assessments of individual backlog work items to assess safety implications and justification for being backlogged. Determine if any backlogged work is required to be accomplished prior to startup.
 - c. Evaluate any open Non-Conformance Reports (NCR) for potential impact on startup. Ensure NCR generated during the shutdown and/or preparations for startup have been adequately dispositioned.
17. Verify feed materials or other materials required for the process are properly staged and within specification.
18. Verify criticality safety surveillances, requirements and controls are satisfactory.
19. Verify required SAR, TSR or safety documentation, and procedures associated with facility operations have been approved and issued. Spot check the documentation associated with the procedure approvals for adequate technical reviews, safety reviews and documented procedure walkdown validations. For selected procedures, perform a field walkdown to verify technical adequacy, correct component labeling and compatibility. Where possible, observe contractor field utilization of procedures. (MCR 1)
20. Verify the qualification requirements of the facility management, technical and operations staff are satisfied and staffing levels are adequate. Include reviews of operator qualification/certification examinations, training records, and required reading documentation. Where possible, observe facility drills. (MCR 13 and 19)
21. Verify the implementation status for DOE Order 5480.19, *Conduct of Operations for DOE Facilities*, is adequate for operations. (MCR 12)
22. Review disposition of any positive USQ determinations. Sample negative USQ determinations to verify adequacy of the process.
23. Verify a process has been established to identify, evaluate and resolve deficiencies and recommendations made by the HQ, oversight groups, official review teams, audit organizations and the operating contractor. Ensure all startup commitments to external organizations have been adequately addressed. (MCR 6)
24. Verify no environmental concerns are outstanding which may impact startup. Verify an adequate Waste Certification Program has been implemented and all waste streams identified. Ensure all required environmental permits are established/issued and an adequate sampling program is in place. Selectively perform interviews of facility staff members to verify an adequate knowledge of inadvertent release procedures.

25. Verify no emergency planning concerns are outstanding which may impact startup. Ensure an emergency plan has been established and implemented. Verify facility emergency drills/scenarios are up-to-date and accountability systems are in place. If possible, observe a facility emergency drill.
26. Verify a routine and emergency operations drill program, including program records, has been established and implemented. Verify all required drills have been performed. If possible, observe an operations drill. (MCR 9)
27. Verify no health protection concerns are outstanding which may impact startup. Perform facility walkthroughs to verify appropriate posting and barricades are established to support startup. Ensure required surveys are complete and current.
28. Verify no safeguards and security concerns are outstanding which may impact startup. Ensure a current Safeguards and Security Plan is in place and all required reviews have been performed. Verify appropriate access restrictions for facility startup have been implemented.
29. Verify OAK self-assessment has been performed which ensures OAK oversight programs such as Occurrence Reporting, Facility Representative (applicable to ORRs only), Corrective Action and Quality Assurance Programs are adequate. Ensure associated procedures have been approved and implemented to support oversight of startup and subsequent operations. Verify the OAK technical and managerial staff (including facility Representatives) for the facility is adequately trained, qualified and staffed to provide direction and guidance to the operating contractor and to support oversight of the startup and subsequent operations in accordance with applicable OAK procedures. (MCR 16 and 20)
30. Verify a systematic review of the facility's conformance to applicable WSS has been performed, any non-conformance have been identified and schedules for gaining compliance have been justified in writing and formally approved. Spot check implementation status versus scheduled dates of compliance schedule agreements, WSS implementation plans, occurrence report corrective actions, and other selected issues such as FR OIMS issues, surveillance findings, etc. (MCR 7)
31. In cases where modifications have been made to the facility, verify the modifications are complete.
 - a) Verify affected facility systems and procedures are consistent with the description of the facility procedures, and accident analyses included in the safety basis. If changes to the safety basis are required, verify required changes to the SAR, TSR/OSR or safety documents as required in DOE Order 5480.21, 5480.22, 5480.23 and OAK SD 5481.1B (when approved) are made and procedures have been approved and implemented. (MCR 15)
 - b) Verify modifications have been reviewed for potential impacts on procedures and training and qualification. Ensure procedures have been revised to reflect these modifications and training has been performed to these revised procedures. (MCR 18)
32. Housekeeping, seismic verification and other unique issues directly related to the shutdown or plant readiness should be addressed.

EXHIBIT 3 – PRE-START/POST-START FINDING EVALUATION CRITERIA

This checklist will be used by the OAK ORR/RA team to evaluate if a finding must be corrected prior to restart (i.e., pre-start).

1. Initial Screening: Does this finding...?

- a. Involve equipment important to safety
- b. Involve processes, functions or components identified in the Operational Safety Requirements or TSRs or equivalent in the approved safety analysis
- c. Involve potential adverse environmental impact exceeding regulatory or site specific release limits
- d. Impact non-safety processes, functions or components which could adversely impact safety related processes, functions or components
- e. Impact worker health and safety
- f. Indicate a lack of adequate operating procedures
- g. Indicate noncompliance with important procedures
- h. Require important operator training not specified in existing facility training requirements
- i. Impact the performance of the facility mission

If the response to any of the above is yes, further evaluation, in accordance with the finding impact criteria below is required. If the response to all of the above is no, the finding may be resolved post-start.

2. Finding Impact:

Does the loss of operability of the item or failure to correct the issue...?

- a. Prevent safe shutdown, or cause the loss of essential monitoring
- b. Require operator action to prevent or mitigate the consequences of events described in the SAR or approved authorization basis
- c. Cause operation outside the OSR and/or TSR equivalent for the approved safety analysis
- d. Result in a reduction of the margin of safety as described in the SAR or approved safety analysis

Does the finding...?

- a. Indicate a lack of control which can have a near term impact on the operability of functionality of safety related systems
- b. Result in an unacceptable impact on worker safety or health
- c. Prevent the facility from performing its mission

3. Is the concern a programmatic issue as defined in Definitions section (4.10) of the AMLS/AMEN Startup and Restart of Facilities SOP?

If the response to any of the above questions is yes, the item should be considered a pre-start item. If the response to all of the above is no, the finding is generally considered post-start. However, some post-start findings may be changed to pre-start by the Team leader because of potential, health safety, and/or environmental significance.

**EXHIBIT 4 – MINIMUM INFORMATION FOR A READINESS ASSESSMENT
MEMORANDUM OF UNDERSTANDING**

The Memorandum of Understanding (MOU) is the document that communicates the basic review process proposed by the contractor. This exhibit contains the minimum information required.

1. **Name of the facility.** This description should be detailed enough for a person with no previous knowledge of the facility to have a basic understanding of the facility and the activities to be reviewed. Include in this description the boundaries of the review, physical (structure, systems and components), programmatic and personnel.
2. **New start or restart.** If a restart, the length of time the facility has been shutdown and the reason for shutdown, including the circumstances that caused the shutdown. Note that the shutdown time begins with the last time the facility had performed program work. The use of system test, acceptance test, or operational test do not constitute operations of the facility.
3. **Hazard Category for the Facility/activity.** Document the Hazard Category for the facility and the basis for the designation (criticality, explosivity, chemical, environment, etc.) including reference to categorization document. In the event that no formal Hazard Categorization has been made, a discussion of the relative hazards involved is appropriate. A defensible technical justification approved by OAK for the Hazard categorization shall be referenced. This explanation shall include justification of segregation, if used.

Document the Hazard Category of the activity (if this is the startup/restart of an activity within a facility).

4. **The means of conducting the RA.** This should identify the means the contractor will implement to conduct the RA. It shall state the graded approach used to provide the objective evidence for safety, based on the hazard (i.e., chemical, energy, fire, industrial safety, etc.) of the facility. For simple reviews pre-made checklists may be applicable. For more complicated RA lines of inquiry may be applicable and for the most complicated Criteria and Review Approach may be the correct method. This section should be based on the hazards involved and the reason for performing the RA.
5. **Justification for the means of review.**
6. **Prerequisites for starting the review.** Defining the prerequisite conditions to be met by the contractor management prior to the start of the RA is an important element of a successful RA. Adequate detail should be included to permit an understanding of exactly which programs and personnel are considered essential to adequate oversight of the facility or process for start or restart. The prerequisites should be described in terms of specific measurable items.
7. **The level of involvement by the contractor, including independence of the review team.** For simple RAs, review by the facility manager or designee may be adequate. For

a more complicated RA, a team with an independent team leader may be required and the makeup of the team shall be discussed. Identify the contractor AA and the team leader.

8. **Facility/Activity Approval Authority and Justification, if differing from this procedure.**
9. **Anticipated Start date.** Document the anticipated start date of the review and the anticipated start date of the facility/activity. The dates are for planning purposes only and should be the best estimate. Identification of a date is not to infer that the start of the review will be schedule driven rather than readiness driven.

EXHIBIT 5 – EXAMPLES OF ROUTINE SHUTDOWNS*

Type of Shutdown	Description	Required Prestart Activity (must be documented)	Person Authorized to Restart
1 – Planned	Routine preventative maintenance or surveillance of nuclear safety systems in accordance with Facility TSR/OSR (e.g., the monthly surveillance testing of its emergency generators or calibration of its alarm systems).	Review post maintenance or surveillance results	Facility Manager and/or Program Leader
2 – Planned	Shutdown for a thorough inspection or audit of nuclear safety systems which results in no substantial modifications.	Review post-inspection results	Facility Manager and/or Program Leader
3 – Planned	Shutdown to allow for a minor modification to nuclear safety system(s).	Perform Management prestart review	Facility Manager
4 – Planned	Shutdown for routine preventative maintenance and decontamination of experimental equipment.	Verify negligible impact on safety system or facility operations	Program Leader
5 – Planned	The facility/program exceeds the pre-established duty cycle standby time limit. (Default is two weeks unless otherwise established and approved by the appropriate Associate Director).	Verify negligible impact on safety system or facility operations	Program Leader
6 – Planned	Shutdown to perform calibrations associated with or affecting nuclear safety.	Verify negligible impact on safety system or facility operations	Facility Manager and/or Program Leader
7 – Planned	Shutdown to allow for experimental system/equipment set up or dismantling activities which occur between experiments or runs having only minor impact on nuclear safety.	Verify negligible impact on safety system or facility operations	Program Manager
8 – Unplanned	Severe weather, such as wind, lightning, tornado, hail, without damage to the facility or its safety systems. <i>NOTE: Requires DOE notification of restart within one day via daily operations status report.</i>	Verify negligible impact on safety system or facility operations	Facility Manager
9 – Unplanned	Shutdown after a seismic event where there is no degradation to the nuclear safety systems or to the ability to function within the normal safety envelope. <i>NOTE: Requires DOE notification of restart within one day via daily operations status report.</i>	Inspect facility and verify safety systems operate as intended	Facility Manager
10 – Unplanned	Shutdown due to false evacuations or alarms, such as Continuous Air Monitors or stack alarms.	1) Determine cause of false alarm and correct. 2) Verify safety systems operating as intended.	Facility Manager
11 – Unplanned	Interruption of outside utility service (such as power, water, communications) where all safety and back-up systems operate normally	Inspect facility and verify safety systems operate as intended	Facility Manager

Type of Shutdown	Description	Required Prestart Activity (must be documented)	Person Authorized to Restart
12 – Unplanned	Shutdown due to a supervisory alarm, ground fault, or only one detector of a criticality alarm.	1) Determine cause of false alarm and correct. 2) Verify safety systems operating as intended.	Facility Manager
13 – Unplanned	Shutdown due to a false security alarm.	Obtain release from security for resuming operations and as appropriate DOE safeguards and security.	Facility Manager
14 – Unplanned	Shutdown due to minor degradation of HEPA filters, but within limits of the TSR.	Change filters, verify proper functioning of new filters.	Facility Manager
15 – Unplanned	Shutdown due to minor fluctuations in control circuits causing backup components to operate on-line, or dampers to function	Restore to lead operation	Facility Manager
16 – Unplanned	Shutdown due to minor corrective maintenance activities (e.g., changing loose belts, replacement of noisy bearings, cleaning alarm contact, loose wire connections, breakers).	Restore to normal operations	Facility Manager
17 – Unplanned	Shutdown due to shorts or failures of electrical systems/paging systems.	Restore to normal operations	Facility Manager
18 – Unplanned	Shutdown for emergency inventory for safeguards and security concerns due to material control and accountability issues.	Obtain release from Material Management Division Leader and as appropriate DOE safeguards and security.	Facility Manager

* - Reference document is March 25, 1992 Assistant Secretary for Defense Programs Notice #20, NOTE: The appropriate reporting under DOE Order 232.1A should occur upon the criteria associated with that order.

